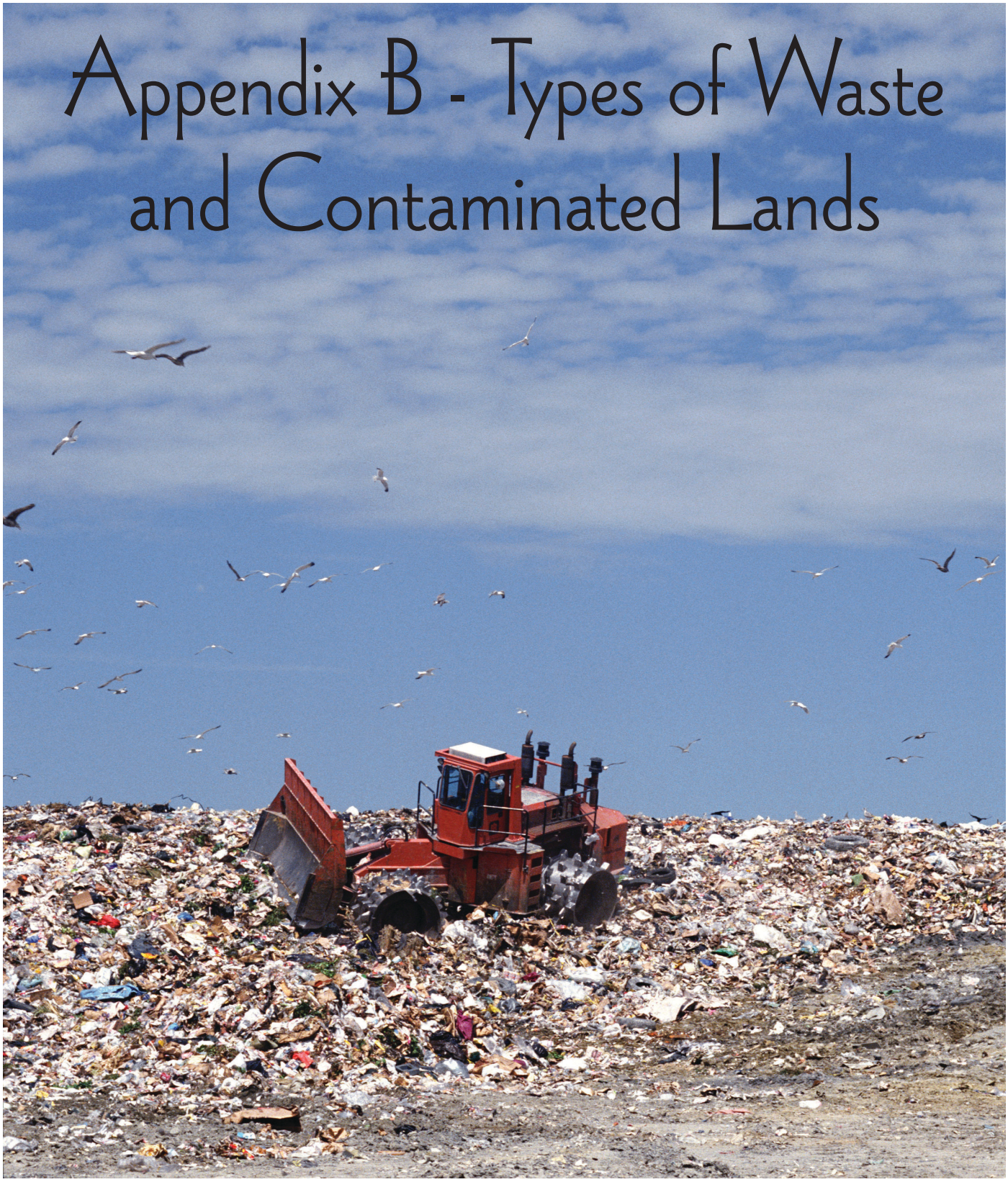
Appendix B - Types of Waste and Contaminated Lands



Types of Waste

Type	Description
Municipal Solid Waste	Municipal Solid Waste (MSW) is the waste discarded by households, hotels/motels, and commercial, institutional, and industrial sources. MSW typically consists of everyday items such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint, and batteries. It does not include waste water. In 2000, 232 million tons of MSW were generated.[1]
RCRA Hazardous Waste	The term "RCRA hazardous waste" applies to certain types of hazardous wastes that appear on EPA's regulatory listing (RCRA) or that exhibit specific characteristics of ignitability, corrosiveness, reactivity, or excessive toxicity. More than 40 million tons of RCRA hazardous waste were generated in 1999.[2]
Radioactive Waste	Radioactive waste is the garbage, refuse, sludge, and other discarded material, including solid, liquid, semi-solid, or contained gaseous material that must be managed for its radioactive content.[3] The technical names for the types of waste that are considered "radioactive waste" for this report are high-level waste, spent nuclear fuel, transuranic waste, low-level waste, mixed low-level waste, and contaminated media (see Appendix D for definitions of these terms).
Extraction Wastes	Extraction activities such as mining and mineral processing are large contributors to the total amount of waste generated and land contaminated in the U.S. EPA estimates that 5 billion tons of mining wastes were generated in 1988.[4]
Industrial Non-Hazardous Waste	Industrial non-hazardous waste is process waste associated with electric power generation and manufacturing of materials such as pulp and paper, iron and steel, glass, and concrete. This waste usually is not classified as either municipal waste or RCRA hazardous waste by federal or state laws. State, tribal, and some local governments have regulatory programs to manage industrial waste. EPA estimated that 7.6 billion tons of industrial non-hazardous wastes were generated in 1988.[5]
Household Hazardous Waste	Most household products that contain corrosive, toxic, ignitable, or reactive ingredients are considered household hazardous waste. Examples include most paints, stains, varnishes, solvents, and household pesticides. Special disposal of these materials is necessary to protect human health and the environment, but some amount of this type of waste is improperly disposed of by pouring the waste down the drain, on the ground, in storm sewers, or by discarding the waste with other household waste as part of municipal solid waste. EPA estimates that Americans generate 1.6 million tons of household hazardous waste per year, with the average home accumulating up to 100 pounds annually.[6]

Types of Waste

Type	Description
Agricultural Waste	Agricultural solid waste is waste generated by the rearing of animals and the production and harvest of crops or trees. Animal waste, a large component of agricultural waste, includes waste from livestock, dairy, milk, and other animal-related agricultural and farming practices. Some of this waste is generated at sites called Confined Animal Feeding Operations (CAFOs), The waste associated with CAFOs results from congregating animals, feed, manure, dead animals, and production operations on a small land area. Animal waste and wastewater can enter water bodies from spills or breaks of waste storage structures (due to accidents or excessive rain), and non-agricultural application of manure to crop land.[7, 8] National estimates are not available.
Construction and Demolition Waste	Construction and demolition debris is waste generated during construction, renovation, and demolition projects. This type of waste generally consists of materials such as wood, concrete, steel, brick, and gypsum. (The MSW data in this report do not include construction and demolition debris, even though sometimes construction and demolition debris are considered MSW.) National estimates are not available.
Medical Waste	Medical waste is any solid waste generated during the diagnosis, treatment, or immunization of human beings or animals, in research, production, or testing. National estimates are not available.
Oil and Gas Waste	Oil and gas production wastes are the drilling fluids, produced waters, and other wastes associated with the exploration, development, and production of crude oil or natural gas that are conditionally exempted from regulation as hazardous wastes. National estimates are not available.
Sludge	Sludge is the solid, semisolid, or liquid waste generated from municipal, commercial, or industrial wastewater. National estimates are not available.

Types of Contaminated Lands

Type	Description
Superfund National Priorities List Sites	Congress established the Superfund Program in 1980 to clean up abandoned hazardous waste sites throughout the U.S. The most seriously contaminated sites are on the National Priorities List (NPL). As of October 2002, there were 1,498 sites on the NPL.[9]
RCRA Corrective Action Sites	EPA and authorized states have identified 1,714 hazardous waste management facilities that are the most seriously contaminated and may pose significant threats to humans or the environment.[10] Some RCRA Corrective Action sites are also identified by the Superfund Program as NPL sites.
Leaking Underground Storage Tanks	Many petroleum and hazardous substances are stored in underground storage tanks (USTs). EPA regulates many categories of UST systems, including those at gas stations, convenience stores and bus depots. USTs that have failed due to faulty materials, installation, operating procedures, or maintenance systems are categorized as leaking underground storage tanks (LUSTs). LUSTs can contaminate soil, ground water, and sometimes drinking water. Vapors from UST releases can lead to explosions and other hazardous situations if those vapors migrate to a confined area such as a basement. LUSTs are the most common source of groundwater contamination, and petroleum is the most common groundwater contaminant.[11, 12] According to EPA's corrective action reports, in 1996, there were 1,064,478 active tanks located at approximately 400,000 facilities. In 2002, there were 697,966 active tanks (a 34 percent decrease) and 1,525,402 closed tanks (a 42 percent increase). The number of national USTs within each area of the U.S. has not fluctuated significantly between 1996–2001. As of the fall of 2002, 427,307 UST releases (LUSTs) were confirmed.[13]
Accidental Spill Sites	Each year, thousands of oil and chemical spills occur on land and in water. Oil and gas materials that have spilled include drilling fluids, produced waters, and other wastes associated with the exploration, development, and production of crude oil or natural gas. Accurate national spill data are not available.
Land contaminated with radioactive and other hazardous materials	Approximately 0.54 million acres of land spanning 129 sites in over 30 states are contaminated with radioactive and other hazardous materials as a result of activities associated with nuclear weapons production and research. Although DOE is the landlord at most of these sites, other parties, including other federal agencies, private parties, and one public university, also have legal responsibilities over these lands.[14]
Brownfields	Brownfields are real property, the expansion, redevelopment or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminate.[15] Brownfields are often found in and around economically depressed neighborhoods. As brownfields are cleaned and redeveloped, surrounding communities benefit from a reduction of health and environmental risks, more functional space, and improved economic conditions. A complete inventory of brownfields does not exist. According to the General Accounting Office (1987), there are approximately 450,000 brownfields nationwide.[16] The EPA's national Brownfield tracking system includes a large volume of data on brownfields across the nation, but does not track all of them. EPA's Brownfield Assessment Pilot Program includes data collected from over 400 pilot communities.[17]

Types of Contaminated Lands

Type	Description
Some Military Bases	Some (exact number or percentage unknown) military bases are contaminated as a result of a variety of activities. A national assessment of land contaminated at military bases has not been conducted. However, under the Base Realignment and Closure (BRAC) laws, closed military bases undergo site investigation processes to determine extent of possible contamination and the need for site cleanup. Currently, 204 military installations that have been closed or realigned are undergoing environmental cleanup. These installations collectively occupy over 400,000 acres, though not all of this land is contaminated. Thirty-six of these installations are on the Superfund NPL list, and, of these, 32 are being cleaned up under the Fast Track program to make them available for other uses as quickly as possible.[18]
Waste management sites that were poorly designed or poorly managed	Prior to the 1970s, untreated waste was typically placed in open pits or directly onto the land. Some of these early waste management sites are still contaminated. In other cases, improper management of facilities (that were typically used for other purposes such as manufacturing) resulted in site contamination. Federal and state cleanup efforts are now addressing those early land disposal units and poorly-managed sites that are still contaminated.
Illegal dumping sites	Also known as "open dumping" or "midnight dumping," illegal dumping of such materials as construction waste, abandoned automobiles, appliances, household waste, and medical waste raises concerns for safety, property values, and quality of life. People tend to dump illegally because legal dumping costs money and/or is inconvenient. While a majority of illegally dumped waste is not hazardous, some of it is, creating contaminated lands.
Abandoned mine lands	Abandoned mine lands are sites that have historically been mined and have not been properly cleaned up. These abandoned or inactive mine sites may include disturbances or features ranging from exploration holes and trenches to full blown, large-scale mine openings, pits, waste dumps, and processing facilities. The Department of the Interior's (DOI) Bureau of Land Management (BLM) is presently aware of approximately 10,200 abandoned hardrock mines located within the roughly 264 million acres under its jurisdiction. Various government and private organizations have made estimates over the years about the total number of abandoned and inactive mines in the U.S., including estimates for the percent land management agencies, and State and privately-owned lands. Those estimates range from about 80,000 to hundreds of thousands of small to medium-sized sites. The BLM is attempting to identify, prioritize, and take appropriate actions on those historic mine sites that pose safety risks to the public or present serious threats to the environment.[19]

Appendix B - Endnotes

[1] U.S. Environmental Protection Agency. *Municipal Solid Waste in the United States: 2000 Facts and Figures,* EPA 530-S-02-001. Washington, DC: U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, June 2002.

[2] U.S. Environmental Protection Agency. *The National Biennial RCRA Hazardous Waste Report,* EPA 530-R-01-009. Washington, DC: U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, June 2001.

[3] U.S. Department of Energy (DOE). Radioactive Waste Management. Order 435.1. July, 1999.

[4] U.S. Environmental Protection Agency. *EPA Report to Congress, Solid Waste Disposal in the United States, Volumes I-II,* EPA 530-SW-88-011 (B). Washington, DC: U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, October 1988.

[5] Ibid

[6] U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. Household hazardous waste. October 29, 2002. (February 25, 2003; *http://www.epa.gov/epaoswer/non-hw/muncpl/hhw.htm*).

[7] U.S. Environmental Protection Agency. *Fact Sheet: Notice of Data Availability Concerning Proposed National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitations Guidelines and Standards for Concentrated Animal Feeding Operations,* EPA 821-F-01-015. U.S. Environmental Protection Agency, Office of Water, November 2001.

[8] U.S. Environmental Protection Agency, Office of Water. Animal feeding operations. 2002. (June 2002; *http://cfpub.epa.gov/npdes/home.cfm?program_id=7*).

[9] U.S. Environmental Protection Agency, Superfund Emergency Response Program. National Priorities List Site Totals by Status and Milestone. February 6, 2003. (October 2002; *http://epa.gov/superfund/sites/query/queryhtm/npltotal.htm*).

[10] U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. Corrective action background. October 8, 2002. (October 15, 2002; *http://www.epa.gov/epaoswer/hazwaste/ca/backgnd.htm#5*).

[11] U.S. Environmental Protection Agency. *National Water Quality 1998 Inventory Report to Congress: Ground Water and Drinking Water Chapters,* EPA 816-R-00-013. Washington, DC: U.S. Environmental Protection Agency, Office of Water, August 2000.

[12] U.S. Environmental Protection Agency. *National Water Quality 1994 Inventory Report to Congress: Ground Water and Drinking Water Chapters,* EPA 813-R-96-001. Washington, DC: U.S. Environmental Protection Agency, Office of Water, June 1996.

[13] U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. End-of-year activity report memorandum to UST regional division directors. December 23, 2002. (February 25, 2003; *http://www.epa.gov/swerust1/cat/eoy02memo.pdf*).

[14] U.S. Department of Energy, Office of Environmental Management and Office of Long-Term Stewardship. *A Report to Congress on Long-term Stewardship Volume I - Summary Report,* DOE EM-0563. January 2001.

[15] U.S. Congress. *Small Business Liability Relief and Brownfields Revitalization Act,* Public Law 107-118 (H.R. 2869). Washington, DC: January, 2002.

[16] General Accounting Office. *Superfund: Extent of Nation's Potential Hazardous Waste Problem Still Unknown,* GAO/RCED-88-44. Washington, DC: General Accounting Office, December 1, 1987.

[17] U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. Brownfields assessment demonstration pilots. October 17, 2002. (May 2002; *http://www.epa.gov/brownfields/jlocat.htm*).

[18] U.S. Department of Defense. Fiscal Year 2001 Defense Environmental Restoration Program Annual Report to Congress. 2001. (November 2002; *http://63.88.245.60/derparc_fy01/derp/indexTen.htm*).

[19] U.S. Department of the Interior, Bureau of Land Management. Frequently asked questions on the Abandoned Mine Lands Cleanup Program. August 9, 2002. (January, 2003; *http://www.blm.gov/aml/faqs.htm*).